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SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE

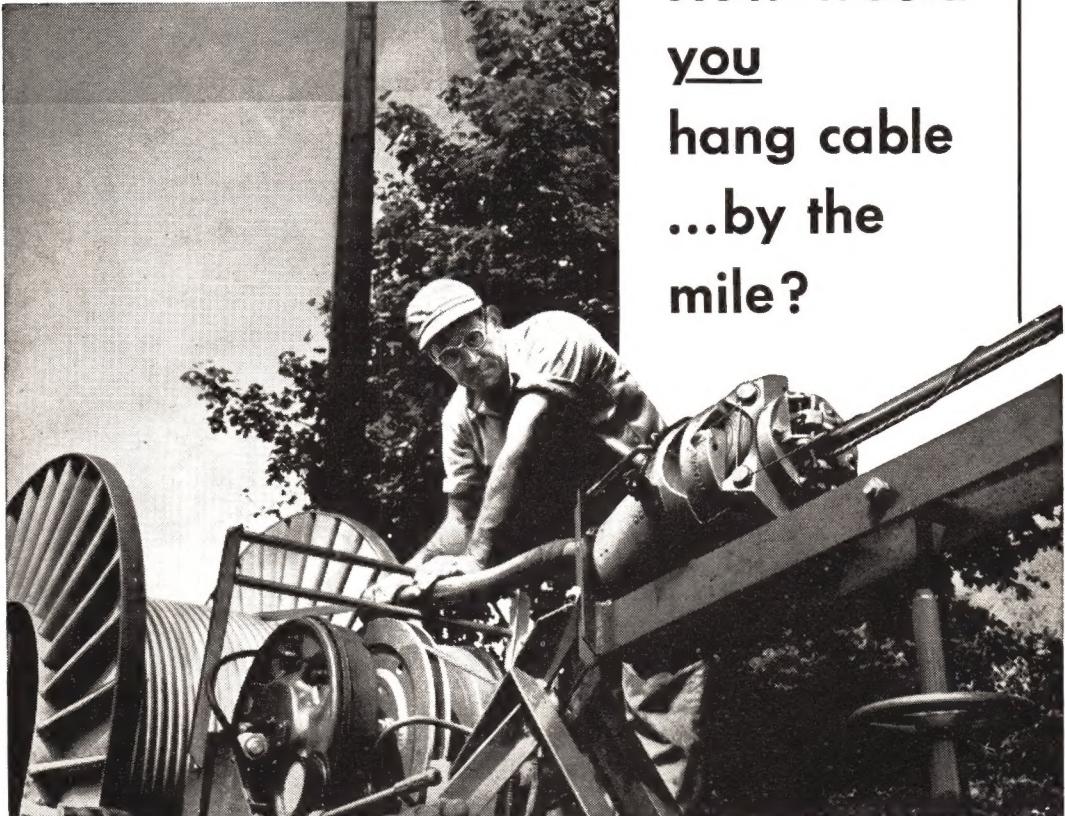


Planes of the Future

See Page 347

A SCIENCE SERVICE PUBLICATION

Cable lasher appears to right of workman. As the cable and supporting strand feed through, the machine rotates, binding them together with steel lashing wire. Meanwhile, a winch hauls the lashed cable into position.



How would you hang cable ...by the mile?

IT is a job your telephone company faces every day. Thousands of miles of cable go up each year—all secured to steel strand running from pole to pole. The best way to secure cable is to *lash* it to the strand with a spiral binding of wire.

One way to do this is to raise cable and strand separately, then lash them together by a rotating machine pulled along by workmen on the ground. This produces a strong, tight support for the cable. But each pole has to be climbed as many as four times. So

Bell Laboratories engineers devised an easier way.

Now, lashing can be done *on the ground* so that cable, strand and lashing wire may be pulled into position as a complete assembly. Usually workmen need make only two trips up each pole.

For telephone users, the new way means that cable can be installed faster, while costs are kept down. It shows again how work at Bell Telephone Laboratories improves each part of your telephone system.



Bell Telephone Laboratories

Improving telephone service for America provides careers for creative men in mechanical engineering

MEDICINE

No Antibiotics for Colds

"Standard" cold treatment of going to bed, keeping warm and drinking plenty of fluids works better for children than addition of sulfa drugs or antibiotics.

► HERE IS the way to treat a common cold:

Put the patient to bed, keep him warm, give him plenty of fluids and aspirin if needed. Do not give sulfa drugs or antibiotics unless or until complications develop.

Patients got well faster on this "standard" cold treatment than those given either a sulfa drug or an antibiotic in addition to the standard treatment, Drs. Howard S. Traisman and L. Martin Hardy of Children's Memorial Hospital, Chicago, reported at the meeting of the Illinois State Medical Society.

Their reports were based on a study of 159 child patients divided into four groups. One group got the standard treatment, the other groups each got standard treatment plus either a sulfa drug or one of two antibiotics. All had the usual cold symptoms with fever of 101 degrees Fahrenheit for about two days.

More than half, 56%, of the standard treatment group got well in one week. Another 34% were well in two weeks while 10% took longer. The drug-treated group all together, however, could show only 39% recovered in one week, 48% in two weeks and 13% taking longer than two weeks.

Complications developed in 16.3% of the standard treatment group and in 12.3% of the sulfa-antibiotics groups. To the doctors' surprise, however, 72.8% of the complications developed within the first five days of standard treatment, while 62.5% developed after five days in the sulfa-antibiotics groups.

The doctors think that the drugs postponed the complications and that the late development of complications was the reason for the longer average time it took the sulfa-antibiotics treated children to recover.

The study, Dr. Hardy said, was set up to prove or disprove his and Dr. Traisman's contention that four out of five cases of "colds" or "fevers" in children run a course of three to five days to recovery with simple bed rest, fluids and aspirin. In six or seven percent of the cases, the condition will prove to be not colds but measles or some other infection, while the remainder may develop some complication such as infection of ear or of neck glands or bronchitis, pneumonia or meningitis.

The use of sulfa drugs or antibiotics, the Chicago doctors believe, is futile as far as curing the cold goes, and may veil or confuse the true course of the disease when the fever means something more serious.

The doctors plan to continue the study

until several hundred children from infancy to age 12 have been included.

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METEOROLOGY

Rain and Tornadoes Caused by Storm Clashes

► GENERAL ATMOSPHERIC conditions for tornadoes and lots of rain have been "extremely good."

Dr. Harry Wexler, director of the Weather Bureau's office of scientific services, explained that a great deal of extremely warm, moist air has been coming up into the mid part of the nation from the Gulf of Mexico. There it has been met by storms coming in from the Pacific and over the Rocky Mountains. The storms, pushing cold fronts

ahead of them, meet the warm moist air.

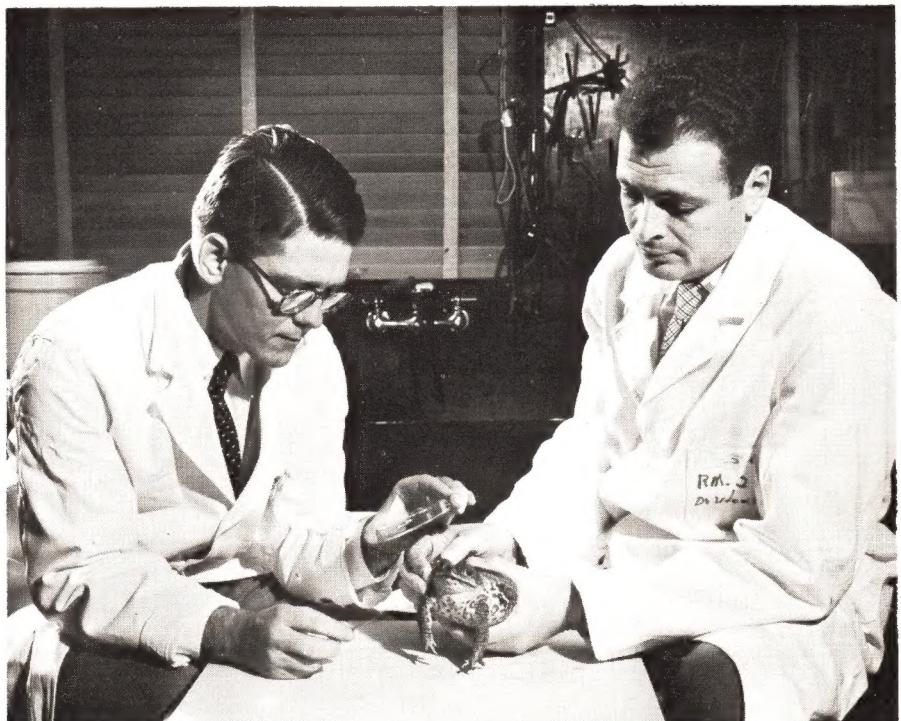
Powerful energies are involved, Dr. Wexler said, in these meetings, energies many times greater than the whole series of A-bombs that were set off in Nevada this spring. The clash which results, the turbulence, the moving about of tons and tons of air, resulted this year in the production of two or three times the normal number of tornadoes and heavier rainfall than usual.

However, there have been more severe tornadoes than those of this year, and no one at the Weather Bureau claims that there is yet a record number of tornadoes for one year. Dr. Wexler pointed to the famous Tri-State tornado of March 18, 1925, which killed 689 people in Missouri, Illinois and Indiana.

The Michigan tornado, on the Canadian border, called to Dr. Wexler's mind a long series of Michigan tornadoes. He made the point that, no matter how unusual the current weather seems, it can usually be topped merely by going back into the Weather Bureau's files.

For instance, he said, 1816 is known as the year without a summer. Two or three shots of really cold air came down into New England during what should have been summer, raising havoc with the crops.

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HYPERTENSION STUDIES—Milking the poison gland of a tropical toad, *Bufo Marinus*, used in the study of serotonin, an important body substance associated with hypertension. The serotonin studies are being conducted by Dr. Sidney Udenfriend, Carroll T. Clark, and Dr. Elwood Titus of the National Heart Institute, Public Health Service. Drs. Clark and Udenfriend are shown here collecting the venom, which is stored in the large neck gland of the toad.

MEDICINE

Glands Aid TB Resistance

Doctors find "striking correlation" between amount of 17-ketosteroids excreted in urine, patients' behavior patterns and character of TB lung injuries.

► THE ADRENAL glands, famous as producers of anti-arthritis cortisone, play an important part in the mechanisms of resistance to tuberculosis, three Seattle, Wash. physicians reported at the meeting of the National Tuberculosis Association in Los Angeles.

The physicians are Drs. Edmund R. Clarke, Jr., and Daniel W. Zahn of the Firland Sanatorium and Dr. Thomas H. Holmes of the department of psychiatry, University of Washington School of Medicine.

The stresses of life, by causing changes in adrenal gland functioning, may influence resistance to the disease, these doctors conclude.

They used the urinary excretion of 17-ketosteroids, chemicals found in the urine, as an index of adrenal gland functioning. There was a "striking correlation" between the amount of these chemicals excreted, the behavior patterns of the patients and the

character of the tuberculosis injuries in the lungs.

The excretion of the 17-ketosteroids, index of adrenal gland functioning, was about 10 times as much in 24 hours in patients with fibrotic disease as in patients with exudative disease. The fibrotic is the kind in which scar or fibrous tissue forms. The exudative is the kind in which cells and other material are poured out into inflamed tissues.

The fibrotic disease was characteristically found in tense, anxious, restless patients who were neither acutely ill nor feverish but whose interpersonal and social adjustments were conflict-ridden. The patients with exudative disease and low 17-ketosteroid excretion were acutely ill patients with fever who were also withdrawn, apathetic or depressed.

Patients who had 17-ketosteroid excretion in between these two groups showed superficial calmness and acceptance of the hospital situation.

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PSYCHIATRY

Dancing Aids Mentally Ill

► SOME ACUTELY sick mental patients are dancing their way back to mental health. The patients are at St. Elizabeths Hospital, Washington, and Chestnut Lodge Sanitarium, Rockville, Md.

How and why dancing is helping them to recovery was reported by Miss Marian Chace, recreation leader at the two institutions, at the meeting of the American Psychiatric Association.

"People everywhere know about dancing," she explained. "They say they like it or they don't like it. Most people like to dance. Few people ever wonder about why they don't like it, if that is true, or when they stopped liking it, since all small children and babies dance without being taught."

"Mental patients dance to express their feelings, too. Even when they would rather not talk with other people, they can dance with them."

Many patients, Miss Chace found, use their dancing as a means of communicating with her. They can show when they dance whether they feel lonely or angry, that they need companionship and understanding, even while they still cannot speak of these feelings.

As the patients find that this activity in a group is a comparatively safe one for

them, they temporarily discard the behavior patterns which they have been using as a protection against their environment. When this happens, they are able to get back to using words and talking to others about them, and to forming relationships in the dance group which seem to be acceptable to them.

The usual methods of communicating with patients who are not using verbal speech often fail. The dance method, when it succeeds, brings the patients to a stage where the psychiatrist can help them even more.

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ARCHAEOLOGY

Man Was Hunter 15,000 Years Ago in America

► MAN WAS living and hunting wild game in America more than 15,000 years ago, Prof. Alex D. Krieger, of the University of Texas told a meeting of anthropologists in Urbana, Ill.

Most authorities on ancient man in America have believed that Folsom Man was the earliest inhabitant of this continent. The distinctive stone weapons of Folsom Man have been found associated with the

remains of an extinct bison. It is estimated that Folsom Man lived about 10,000 years ago, and radio-carbon dating confirms this estimate.

The earlier inhabitants of America are also known to us by their weapons, a peculiar sort of spear point known as "Clovis fluted points." The animal remains found with the Clovis points are almost always mammoths, animals which roamed in America some 15,000 years ago, Prof. Krieger said. Prof. Krieger spoke at a joint meeting of the Society for American Archaeology and the Central States Anthropological Society.

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VITAL STATISTICS

**The Older the Father
More Likely Baby Is Girl**

► WHETHER IT will be a boy depends on how old the expectant father is. The older the father, the more likely the baby is to be a girl.

This finding has been calculated from U. S. Bureau of Vital Statistics records for the years 1947, 1948 and 1949 by Dr. Edward Novitski of the University of Missouri.

That older mothers have fewer boy babies than younger mothers is well known. But, Dr. Novitski finds, this is because when the mother is older, the father is also usually older.

The fact that later children are more likely to be girls than the first children of a marriage also can be explained on the basis of the father's older age when the later children are born.

Why the changing age of the father, rather than the mother, affects the sex ratio is not known. A genetic factor is not necessarily involved. There might, Dr. Novitski suggests, be conditions of a physiological nature which change with the age of the father and thus tend to shift the sex ratio.

Or, he suggests, on the basis of fruitfly studies, it might be a decreasing level of interchange of factors or genes within the chromosomes with increasing age that accounts for the sex ratio shift with the father's age.

The mathematics by which Dr. Novitski found that the father's rather than the mother's age affects the sex ratio is reported in detail in *Science* (May 15).

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PHYSICS

**Observe Cosmic Rays
From Alaskan Mountain**

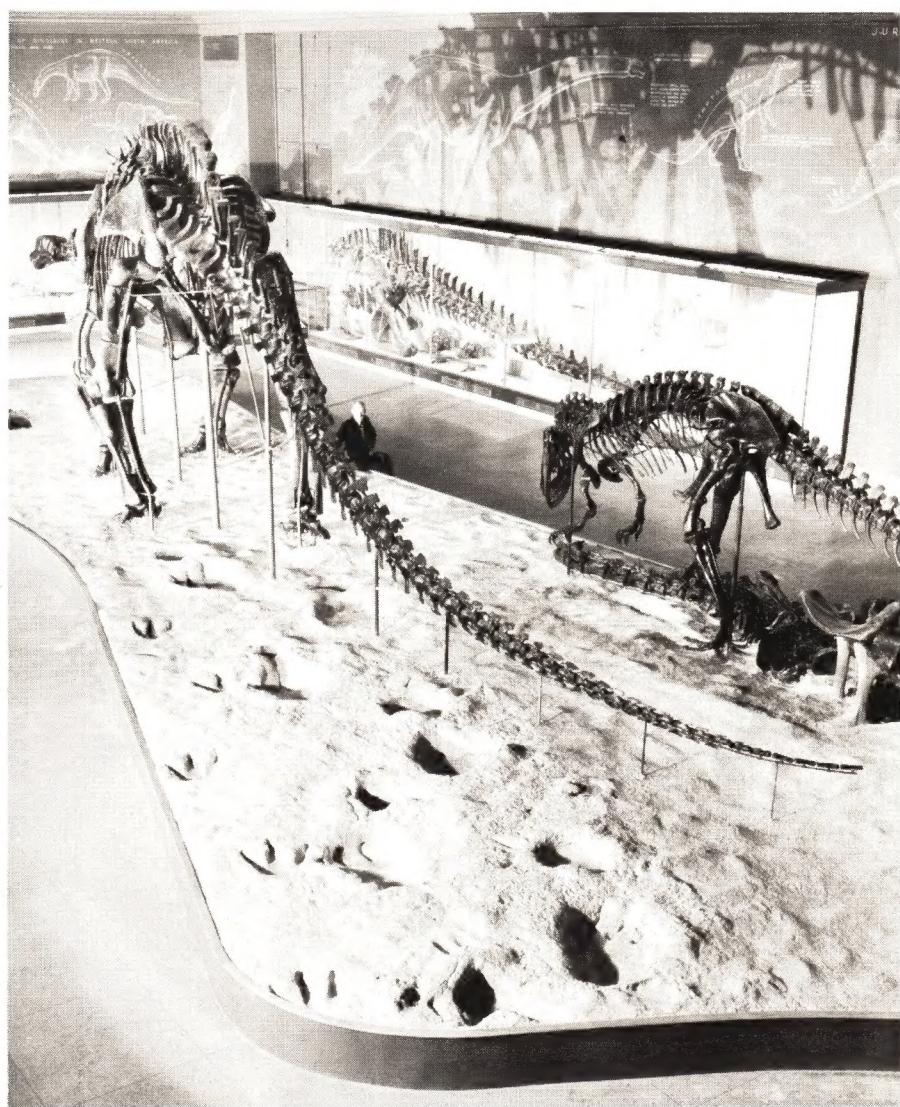
► A TEAM of scientists from New York University and the University of Alaska will probe the mysteries of cosmic rays this summer from Alaska's lofty dormant volcano Mt. Wrangell.

Financed by the Office of Naval Research, the project is aimed at revealing more about the origin and nature of cosmic rays that bombard the earth from somewhere in space. The cosmic particles are believed to affect radio communications. They also are believed connected somehow with the shimmering northern lights of the Arctic.

The expedition will be led by Dr. Serge A. Korff, New York University physics professor.

Dr. Terris Moore, president of the University of Alaska, will supervise establishment of the station. Philip Bettler and Charles Wilson, both of the University of Alaska's geophysical institute, will work closely with Dr. Moore in setting up the station near Mt. Wrangell.

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HISTORICAL EARTH DAYS—View of the newly redesigned Jurassic Hall in The American Museum of Natural History showing footprints made millions of years ago by a dinosaur similar to the Brontosaurus.

These tracks were discovered in a river bed in Texas by Roland T. Bird.

PALEONTOLOGY

Early Days Recreated

► A 100,000,000 years of prehistory that began over 200,000,000 years ago have been recreated and telescoped into the new Brontosaurus Hall of the American Museum of Natural History, now open to the public for the first time.

The Brontosaurus Hall, which took over a year to prepare, includes fossils of the first animals to invade the dry land, ancestors of the modern frogs and salamanders, and continues with a progressive series of fossils leading to the 66-foot long Brontosaurus, a master in the Age of Reptiles.

The amphibian fossils represent the first

of the backboned animals to crawl onto the land from the rivers and oceans. This migration occurred about 225,000,000 years ago. The giant reptiles, which arose from the amphibian ancestors in the course of evolution, dominated the earth for 100,000,000 years before their mysterious disappearance.

Brontosaurus Hall sets forth in visual terms what is known about the evolution of early land-living, backboned animals, said Dr. Edwin H. Colbert, curator of fossil reptiles and amphibians for the museum.

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BIOCHEMISTRY

Dead Bones Live Again

Foresee better control over abnormal bone formation as result of development of diets that reduce tooth decay in animals by 75 per cent.

► APPARENTLY DEAD bones have been revived and endowed with twice the ossifying power they had before their destruction in experiments reported by Dr. Albert Edward Sobel of Brooklyn, N. Y., at the joint meeting of the American Chemical Society's Chicago Section and the American Association of Clinical Chemists in Chicago.

Diets that reduced tooth decay in laboratory animals by 75% in extent and severity were developed in the same research.

Improved control over abnormal bone formation and more skillful treatment of bone wounds are foreseen as a result of this fundamental work.

It all started when Dr. Sobel and associates in the chemistry department of the Jewish Hospital, Brooklyn, studied the composition of new mineral deposited in bits of living bone from solutions containing the mineral ingredients of bones and teeth. These are calcium phosphate and calcium carbonate.

From carbonate-rich solutions the mineral which came out was rich in carbonate. From phosphate-rich solutions it was richer in phosphate. From this information, diets were designed to produce blood rich in carbonate or rich in phosphate. The diets were then fed to cotton rats.

These laboratory animals are susceptible to dental caries closely resembling tooth decay in humans. The high carbonate-low phosphate diet produced teeth high in carbonate. The low carbonate-high phosphate diet produced teeth low in carbonate.

Because acids produced in the mouth can dissolve the calcium carbonate portion of tooth minerals without dissolving the other tooth mineral, calcium phosphate, Dr. Sobel expected the teeth high in carbonate to be more susceptible to decay. This was the case.

Animals with good tooth composition had only about one-fourth as much tooth decay as those with poor composition, and the decay in each tooth was less than one-fourth as great in well constructed teeth.

The revival of dead bone cells was done with bits of bones taken from living animals. The bone cells were apparently killed by treating them with salts of magnesium, copper, beryllium, strontium and ordinary table salt. These salts destroyed the mineralizing power of the bone cells, whether there was a lot or no calcium present.

The bone cells were then revived and their ability to mineralize was restored by treating them with calcium chloride. The bone cells can be revived up to half a day,

A chemical called an enzyme, Dr. Sobel and associates found, plays a big part in governing the mineralization of bone. This chemical cannot work unless it combines with calcium. Other salts, like copper, beryllium and magnesium, however, can compete with the calcium to combine with this enzyme. When they succeed, they block the ability of the cell to ossify, or form new bone cells.

Shaking the bone cell with a calcium salt when none of these other salts is present makes the "marriage" of calcium and enzyme take place at a greater rate than under normal conditions in the living body. The result is that the revived cell has a greater ability for mineralization than before.

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VETERINARY MEDICINE

Vaccine for Blue Tongue

► DEVELOPMENT OF a vaccine to combat the mysterious killer of sheep, the African blue tongue disease, seems near success. This was reported by Drs. D. G. McKercher and Blaine McGowan, Jr., of the University of California School of Veterinary Medicine, Davis, Calif.

The researchers have been developing the vaccine by passing the living virus, isolated from an infected sheep, through a long series of transplantations into fertile hen's eggs. This treatment seems to weaken, or attenuate, the virus, so that it can be given to healthy animals who then build up resistance to the virus.

In six months they have passed the virus through 30 generations.

Blue tongue, until it was discovered recently in California flocks, was hardly known outside of Africa. Dr. R. A. Alexander, South African expert on the disease, is now in the United States at the request of the U. S. Department of Agriculture, to lend his experience to solving the blue tongue problem here. (See SNL, May 9, p. 303.)

Besides studying the California outbreak, Dr. Alexander has already verified the presence of the disease in Texas flocks and said all evidence points to its occurrence in Utah.

A vaccine against blue tongue is already in use in South Africa. However, some experts fear that the South African vaccine is for a virus strain not present in the

● R A D I O

Saturday, June 13, 1953, 3:15-3:30 p.m. EDT
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Melbourne R. Carriker, assistant professor of zoology, Rutgers University, State University of New Jersey, New Brunswick, N. J., discusses "Farming our coastal Waters".

EDUCATION

Girls Go to School Longer Than Boys

► SIGNS THAT the so-called weaker sex is perhaps becoming the more learned appear in a study by Metropolitan Life Insurance Company statisticians.

At least, the girls go to school longer. In 1950, women 25 years and older had on the average 9.6 years of schooling compared with 9 years for the men. For women, the average years of school completed increased by almost one year in the past decade while for men the rise was not quite one-half year.

U. S. Bureau of the Census figures were the bases of the study.

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United States and that its importation here might lead to the introduction of the strain.

Blue tongue disease struck flocks totaling 325,000 head last year in California, resulting in 15,000 deaths and large losses from poor wool production and loss of weight of infected animals.

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TECHNOLOGY

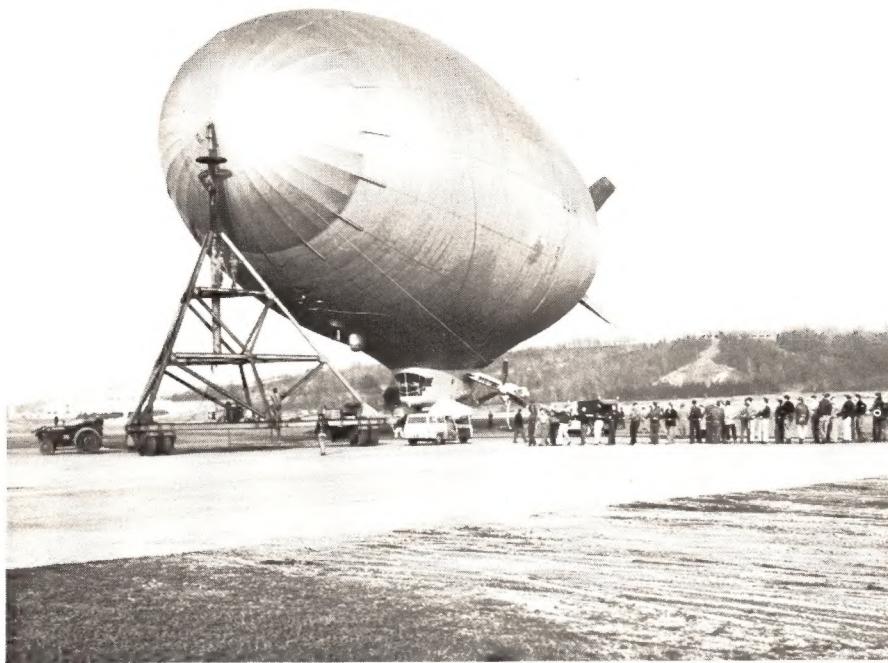
Streamlined Periscopes To Go on Navy Submarines

► STREAMLINED PERISCOPES for Navy submarines will allow the underwater ship-killers to move faster without detection while scanning the sea for targets.

Experiments in the David Taylor Model Basin tow tank at Carderock, Md., revealed that streamlining periscopes cuts down tell-tale splashing, or pluming, of the "up" periscope on the fast-moving submarine. Sleek lines also keep the periscope from vibrating, a problem which has "blinded" the sub's "eye" at high speeds.

Streamlined periscopes now are being installed on the Navy's front-line subs by engineers of the Edo Corporation, College Point, N. Y. A company spokesman said also that problems "aggravated by the development of the snorkel" have been licked.

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ANTI-SUBMARINE BLIMP—The new non-rigid blimp, ZP2N-1, has successfully flown for 42 minutes, the U. S. Navy announced. The blimp, designed for anti-submarine warfare, was test flown from the Goodyear Aircraft Corp. plant in Akron, Ohio.

MEDICINE

Eyes Cause Headaches

In about one-fourth of cases, eye trouble causes or increases headaches. Suggest reason is that indoor life puts undue strain on eyes.

► IF YOU have a headache at the end of the morning or afternoon at the desk, it may be from your eyes. Many, many conditions, of course, can cause headaches, but in about one-fourth of the cases, the headaches are caused by or made worse by eye troubles.

How the eye trouble and headaches are related is explained by Dr. Franklin M. Foote, executive director of the National Society for the Prevention of Blindness.

"Your eyes are part of your body, and when they are strained, or their normal function is disrupted, physical symptoms such as headache often result," he says.

Dr. Foote points out that nature originally intended our eyes to be used for outdoor, distance seeing, but modern life requires a great deal of detailed work. As a result of this added burden on our vision, many of us suffer eyestrain, one sign of which is headache.

"You can't 'wear out' healthy eyes no matter how much you use them," Dr. Foote says. "However, many eye conditions—such as astigmatism, farsightedness (hyperopia),

and muscle imbalance—become more noticeable under the demands of detailed visual tasks.

"We know of many cases where these conditions, often unsuspected, cause fatigue, headache and even loss of appetite after long hours of reading or desk work.

"For example: many business men and women who complain of headaches in the late morning or afternoon, are found to be suffering from an eye defect. The same may be true of the child who is inattentive at school, the student who cannot concentrate, the patient who has a headache when he reads in bed and many others."

Headaches may be caused by more serious trouble.

"An increase in fluid pressure in the eye," Dr. Foote warns, "often causes head pain like that of a common 'ache', yet this increased ocular pressure may mean glaucoma, a sight-robbing disease which is slowly destroying the vision of about 800,000 Americans."

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AERONAUTICS

Five Research Planes Yield Valuable Data See Front Cover

► FIVE OF the research aircraft at the Air Force Flight Test Center, Edwards Air Force Base, Calif., line up on the runway during a test program. They are shown on the cover of this week's Science News Letter.

In the first row are the Navy's Douglas D-558-I Skystreak, the USAF's Bell X-5 and the USAF's Convair XF-92A experimental delta wing interceptor. Behind them are the Navy's Douglas D-558-II Skyrocket and the USAF's Northrop X-4.

The "NACA" markings are for the National Advisory Committee for Aeronautics, which works on the research aircraft project with the Air Force's Air Research and Development Command and the Navy's Bureau of Aeronautics to obtain data for the nation's future high performance aircraft.

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TECHNOLOGY

One Photographic Bath To Develop and Print

► FILM AND paper prints of aerial photographs can be successfully developed and fixed all in the same bath, H. S. Keelan of Boston University's Physical Research Laboratories told the Society of Photographic Engineers meeting at West Point, N. Y.

Four monobaths, as they are called, were evolved to reduce the time, space and equipment needed to process aerial pictures. These monobaths contain various amounts of commonly used photographic chemicals.

A proper balance between developing and fixing is obtained by varying emulsions, contrast, acidity, temperature and agitation. A loss in photographic speed of from 40% to 50% in the monobaths is compensated for by use of opaque dyestuffs placed on the silver particles of the photographic image during development.

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TECHNOLOGY

Use Plastics as Photographic Material

► PLASTICS CAN be made into photographic material, S. B. Elliot of the Ferro Chemical Corp., Bedford, Ohio, told the Society of Photographic Engineers meeting in West Point, N. Y.

Small quantities of halogenated compounds unstable to actinic light are incorporated into various plastics. Among the plastics that can be treated in this way are polyvinyl chlorides, polyvinylidene chloride, cellulose acetate, ethyl cellulose and other materials.

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BIOCHEMISTRY

Chemicals Found That Stop TB-Germ Poison

► CHEMICALS THAT might keep the tuberculosis germ, or bacillus, from producing its poison in the body are now being tested, Drs. Hubert Bloch and Hans Noll of the Public Health Research Institute of the City of New York reported at the meeting of the National Tuberculosis Association in Los Angeles.

The poison is a fatty substance called a lipid. It is at least partly responsible for the virulence of the TB germ, and has been extracted by these scientists from the waxy, outer surface of young cultures of the germs. The substance has been purified and some of its chemical nature learned. It is not an acid and apparently contains in its molecule one atom of nitrogen.

A single injection of this substance does not cause any lethal effect in mice. Repeated injections of very small amounts, however, kill the animals. The same killing effect is produced by a single injection of this fatty substance with infection by weakened TB germs, such as BCG, which do not themselves cause a progressive disease.

Neither streptomycin nor isoniazid, two modern anti-TB drugs, prevent the germs from producing their poison. Some of the thiosemicarbazone series of chemicals appear to have this ability but they are generally too toxic for use in man.

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MEDICINE

Afterbirth Serum Gives Relief to Arthritis

► RELIEF of stiffness, pain, joint tenderness and swelling has been given to some arthritis patients by treatment with placental blood serum, Dr. Morris Spielberg of Brooklyn, N. Y., reports.

The placental blood serum comes from the placenta, or afterbirth.

In 10 of 15 patients given this treatment, the improvement was held for six months without further treatment. The improvement began as early as the second day in three cases. In nine patients improvement began within the first week, and one began to improve on the tenth day.

Of the 15 patients treated, three had complete remission of the disease, three showed major improvement, four showed minor response and five no response.

In his report to the American Medical Association's *Archives of Internal Medicine* Dr. Spielberg states that no new joint trouble developed and that patients had "an increased sense of well-being, more restful sleep, improved appetite and improved functional capacity and ability to carry on duties."

They lost the anxious, tense look on their faces.

The patients were women whose ages ranged from 26 to 75 years and who had had active rheumatoid arthritis from two to 31 years. Best results were obtained in the premenopausal group, the failures being in the women aged 56 to 75.

The material in placental blood serum which helped the arthritic patients is unknown. It is not, Dr. Spielberg says, either cortisone or ACTH, famous anti-arthritis hormones.

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CHEMISTRY

Sound Waves Test Hair for Permanents

► SOUND WAVES are a new aid to safe and successful permanent waving, Dr. D. H. Powers of Warner-Hudnut, Inc., announced at an American Chemical Society meeting in Summit, N. J.

The technique involves determining the quality of hair by measuring the speed of sound traveling along a hair while it is stretched under increasing loads.

"This sound wave technique," he said, "appears to be the only accurate method of measuring true hair elasticity before and after waving and can be applied to hair on the head."

"While waving and proper neutralization show some hair damage, the use of the sonic or sound-wave technique allows a study, for the first time, of just what damage or softening occurs and how much rebuilding is achieved by proper and improper neutralizations."

Dr. Powers warned that recent methods designed to simplify hair waving by eliminating the neutralization step involve an unjustifiable risk.

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BIOCHEMISTRY

Arthritis Drugs Give Relief From Snake Bite

► QUICK RELIEF of pain, swelling and fever of snakebite can be had through cortisone and ACTH, or corticotropin, famous as arthritis remedies. They may even be life-saving in cases when antivenom causes hives all over the body, as often happens, particularly if more than one dose of antivenom must be given.

This is the opinion of Drs. William W. Hoback and Thomas W. Green of Richlands, Va., based on their experience with the two hormone chemicals in treating three small children who were bitten by copperheads.

Their patients were five years and younger, an age when the outlook for recovery from snakebite is especially poor. They report their cases in the *Journal of the American Medical Association* (May 16).

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IN SCIENCE

ZOOLOGY

20 Feet of Baby Snakes From 8 Foot Boa Mother

► TWENTY FEET of lively, wriggling snakes have been born to an eight-foot boa constrictor in the U. S. National Zoological Park, Washington. And three couples of rare monkeys flown in from West Africa, plus two new-born Chinese water deer, have done their bit to augment the population of the national zoo.

The Central American mother boa had 20 young which Dr. William M. Mann, director of the zoo, estimated to range from 12 to 15 inches in length. Boa constrictors are viviparous, that is, they produce live young. Many species of snakes, however, lay eggs from which their young are hatched.

The three monkey couples, two pairs of mangabees and a pair of guenons, were flown in from West Africa. Dr. Mann said he had never seen either of the species before. Both are large monkeys, restricted to Africa. The guenon gets its name from a French word meaning "a face-maker," which title he well deserves.

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METEOROLOGY

Snowfall Record Holder Is Silver Lake, Colo.

► THE ALL-TIME record holder for snow in the United States is Silver Lake, Colo. The town, however, had to wait 32 years after the record-producing storm for its crown.

Until now the record for 24 hours of snowfall was generally thought to be held by Giant Forest, California, which recorded 60 inches one day in January, 1933. Silver Lake, however, measured 76 inches on April 14-15, 1921. Giant Forest was also thought to have held the two-day record with 87 inches in February, 1926, but Silver Lake had 95 inches between April 13 and 15, 1921.

The four-day record, previously held by Vanceboro, Me., with 96 inches on Dec. 6-10, 1933, fell to the same storm where 100 inches came down in three days and 13 hours.

The measurements were checked by J. L. H. Paulhus of the U. S. Weather Bureau and found to be reliable. Therefore the Bureau has ruled that "the Silver Lake snowfall is being accepted as providing the highest known rates in the United States for durations to four days."

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THE FIELDS

CLIMATOLOGY

Norway's Glaciers Start to Grow Again

► FOR THE first time in 20 years, snow-covered glaciers in Norway are slowly moving forward.

Two glacial branches, part of the Svartisen and Jostedalsbreen glaciers, have shown a substantial increase in ice volume during the past two years, according to Norwegian glaciologist Olav Liestol. It is too soon to tell whether these advances are indications of a change in the climate, he says.

On the whole, major glaciers in Norway have shrunk approximately 50% in total area during the past 50 years, Mr. Liestol reported recently to the Norwegian Academy of Science in Oslo.

The Nigardsbreen branch of the Jostedalen glacier has shrunk more than 300 feet vertically and receded two-thirds of a mile in the period from 1937 to 1951. The Storbreen glacier in Jotunheimen shrank steadily up to 1951, but since then has shown an increase in ice volume, said Mr. Liestol.

Norway's largest glacier, Jostedalen, is situated in western Norway, on the border between Nordfjord and Sogn. Its main body and extensions cover an area of about 489 square miles. The small Jotunheimen glaciers lie farther inland, in deep clefts between lofty mountain peaks.

Svartisen, located in north Norway, covers approximately 215 square miles, making it the second largest glacier in Norway today.

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ENGINEERING

"Volume Boiling" Studied To Probe Bubble Formation

► ONE OF the processes which may be involved in harnessing atomic power, "volume boiling," is being studied by engineers at the University of California at Los Angeles for the Atomic Energy Commission.

In "volume boiling" the heat source, for example, a fissionable substance, is distributed uniformly within the water. Thus the liquid is heated uniformly, and bubbles are formed in the body of the liquid. This differs from more familiar processes, such as a tea kettle, in which the heat source surrounds the water and bubbles are formed on the heating surface.

The study is concerned with fundamental aspects of bubble formation and rate of increase in size of bubbles after they are formed in the process of converting water to steam by this method.

Of particular interest is the variation in

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the rate of vapor formation effected by a sudden change in heating rate. This is measured by passing a 250,000 volt X-ray beam through the boiling solution. Changes in the amount of X-ray absorption by the solution can be related to variation in the rate of vapor formation.

The research has been conducted by M. L. Greenfield, W. L. Martin, B. R. Mead, R. P. Lipkis and others of the U.C.L.A. engineering staff.

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ASTRONOMY

Discover New Material At Arizona's Meteor Crater

► DISCOVERY OF a new kind of material formed when a meteorite smashed out Arizona's famous huge crater has been made by Dr. H. H. Nininger, director of the American Meteorite Museum, Winslow, Ariz.

The new product is in the form of teardrop-shaped pieces and irregularly twisted cinder-like masses, all apparently loaded with particles of nickel-iron, Dr. Nininger reports.

Although the frothy pieces have been spotted many times before, it was always thought that they resulted from the action of nearby volcanoes. Now, Dr. Nininger states, laboratory tests have shown that instead of lava, the "bomblets" are frothy glass in which are embedded tiny spherules of nickel-iron.

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TECHNOLOGY

Photographs Help Study Explosions, Rockets, Flames

► IMPROVED PHOTOGRAPHIC methods are helping scientists study underwater explosions, rockets, welding flames, and parachute drops.

In capturing what happens when explosions occur under the sea, I. I. Taylor of the U. S. Naval Shipyard, Norfolk, Va., used extremely fast moving film and tiny grain-of-wheat lamps in a special camera.

The Society of Photographic Engineers meeting in West Point, N. Y., also heard how K. R. Stehling of Princeton's Forrestal Research Center studies the injector sprays of rockets with high speed color photography.

Flames are made to stand still for their pictures by high power flashes of light spaced only a few thousandths of a second apart, R. M. Fristrom of the Johns Hopkins Applied Physics Laboratory, Silver Spring, Md., reported.

Two synchronized cameras photographing lights on experimental parachute drops gave new data to a Goodyear Aircraft Corp. research team consisting of O. W. Loudenslager, R. S. Ross and F. T. Stimler.

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ENTOMOLOGY

Green Light on Beaches Is Firefly Love Signal

► IF YOU are moon-gazing along an Atlantic coast beach this summer and see two short green flashes of light from across the dunes, do not send for counter intelligence. You might, however, send for the nearest entomologist.

For the lights are signals, all right, but probably an interested male firefly signaling for a female of similar interests. And it may be that this firefly is one of a new species just described by Dr. Frank A. McDermott of the Smithsonian Institution.

The new green-flashing firefly, which seems to be restricted to beach and sand dune areas, was first observed at Bethany Beach, Del., last summer. It is slightly smaller than other known North American species. Although these Bethany fireflies are the only ones of the species to be reported yet, Dr. McDermott thinks it may be widely distributed along the Atlantic Coast.

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OCEANOGRAPHY

Ocean Scientists To Explore Pacific

► "EXPEDITION Trans-Pacific" will leave San Diego on July 17 for five months of exploration of scientifically unknown areas of the Pacific Ocean.

The crew of marine biologists and oceanographers aboard the research vessel Spencer F. Baird will map currents of the North Pacific, probe into its depths for clues to the nature of the ocean bottom and water masses, and collect specimens of fishes and other marine life.

The course of the Trans-Pacific expedition, sent out by the Scripps Institution of Oceanography of the University of California and sponsored by the Office of Naval Research and other Department of Defense bodies, will run from San Diego northward to the Aleutian Islands, then westward into the Bering Sea.

The Baird will then take a southerly course into the scientifically unexplored region east of Korea and Japan. She will return to home port Dec. 2, after a 16,000 mile voyage of exploration.

The Scripps Institution of Oceanography has sent out four other major ocean expeditions since 1950. In that year, Mid-Pacific expedition went to the Marshall Islands. In 1951, Northern Holiday expedition explored the Gulf of Alaska.

Shellback expedition went to Peru in 1952, and Capricorn expedition covered a wide area of the South Pacific in 1952-53.

Dr. Warren S. Wooster, who was scientific leader of Shellback and part of Northern Holiday expeditions, will lead the Trans-Pacific expedition.

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TECHNOLOGY

Nails Now Hold Tighter

Research produces nails with 470% more "holding ability" than old style smooth-shanked nails. These nails with threaded shanks make a house frame four to six times stronger. Testing centers try out new designs.

By HORACE LOFTIN

► THE CIVILIZED world is held together, in a very real sense, by nails. For the countless number of jobs nails perform, over 1,000 nails of different head, point, shank, size, material and strength have been designed and are in use.

With all their variations, the one essential likeness is their ability to hold and hold tightly.

Holding power of nails is largely a matter of frictional resistance or wedge action of nail shanks to the material into which they are driven. So nail manufacturers are constantly experimenting and designing to find new nails that resist withdrawal better and longer. Once a new nail is created, it must be rigorously tested to find how well it works.

The Wood Research Laboratory, housed in a hugh stone building on the campus of the Virginia Polytechnic Institute, Blacksburg, Va., is just one of the testing centers, but an important one. For here is the center of research on nails with threaded shanks.

The director of the laboratory, Dr. E. George Stern, standing among his giant-sized instruments, explained how they exert direct or lateral pulls and pushes of measured strength on nailed structures, to test the holding power of different nails. There are also chambers to simulate tropical or Arctic conditions or to speed up the aging of wood, to test the reaction of nails in wood to varying climate and time.

"Here are four kinds of nail shanks," Dr. Stern said, holding four very different looking nails in his hand. "The one you are most familiar with is the plain-shanked nail, the common nail with the smooth-surfaced shank. But these others may be quite strange to you."

One of them had a series of parallel threads running down the shank at 60-degree angles, looking like the threads of a screw. "When you drive this 'helical-threaded' nail in wood," he said, "it turns just like a screw does. The thread shoulders force the wood fibers aside and form grooves in the wood. This compresses the wood around the shank, making increased frictional resistance. And that adds up to increased holding power."

The threads of the next nail formed a series of closed rings down the shank. This "annular-threaded" shank works on a some-

what different principle from the helical thread, Dr. Stern explained. When the annular threads bite into a piece of wood, the wood fibers are forced between them and act as wedges to prevent the nail from moving backwards.

The last nail seemed a hybrid between the annular- and helical-threaded nails. While its shank contained a series of parallel spiraling threads like the helical-threaded nail, the angles they made were so sharp—about 15 degrees—that the nail seemed almost to have annular threads. And, Dr. Stern said, this is exactly the reasoning behind the design. This nail exhibits both increased frictional resistance of the helical thread and wedging effect of the annular thread.

Experiments at the Wood Research Laboratory show that it takes about 15% more work to drive a threaded nail into a piece of wood than it does a plain-shanked nail. But for that 15% more work, you get 70%

more resistance to withdrawal from a piece of partially air-dry pine. After five months seasoning of the wood, threaded nails give an average of 470% more holding power than smooth-shanked nails.

"Now, about costs," Dr. Stern said. "Suppose you were planning to build a 50-x-24-foot, five-room house with attached garage, costing in all about \$10,000. The construction would require about 560 pounds of nails—about \$67 worth of plain-shanked nails, or six-tenths of one percent of the entire costs.

"If you substitute threaded-shank nails completely for the job, their cost would be about \$106, or about one percent of the total expense.

"Then threaded nails cost more? Not when you consider that using them in the unheated frame of the building alone would give you a framework four to six times stronger than the same structure built with plain-shanked nails."

"Here is another nail that may interest you," Dr. Stern said, holding up a plain-shanked nail equipped with a double head. There was about $\frac{1}{4}$ inch between the upper and lower heads.



BETTER HOLDING NAILS—The right nail for the job is the goal of nail designers. Shape of head, shank, point, material and size all vary according to the nail's function. The threaded-shank nails shown in the photo hold harder the longer they stay in the wood.

"If the advantage of threaded nails is that they are hard to withdraw, then the advantage of smooth-shanked nails is that they are easier to withdraw. So, when you erect temporary structures like scaffolds, you would use plain-shanked nails, because they would come out easily when the job is done.

"To make the job easier still, why not design the nail with an extra head, so that you can get the hammer claw under it without scarring the wood? And thus you have the nail with a duplex head."

It is this kind of designing with an eye to function that makes today's nails more serviceable and convenient, longer lasting on the job and harder holding.

Reaching into a large glass bowl resting on his desk and filled with hundreds of different nails, Dr. Stern fished around a few moments and pulled out two very dissimilar fence staples. One was the common U-shaped staple, its smooth shanks of equal length.

The second staple had one shank twice the length of the other, and this longer shank was ringed with annular threads.

"Now, suppose you are putting up a wire fence with this old style staple," Dr. Stern said. "You will have to place the wire inside the U, hold both the wire and staple with one hand, while you try to hammer with the other.

"But if you use the L-shaped staple, you can run right down the line of fence posts, driving in the points of the longer shanks. Then you can lay the fence wire into the still open L's of the staples in a single operation. An easy blow of the hammer drives the rest of the staple in."

The annular threads of the longer shank are for additional holding power, Dr. Stern

explained. The U-shaped, smooth shanked staple, while it holds firmly when first put into a post, begins to lose its resistance to withdrawal with the passing of time and may soon pull out. The L-shaped staple with a threaded shank, however, actually increases in holding power the longer it is in place.

Tests at the Wood Research Laboratory have demonstrated that there is as much as 70% increased resistance to withdrawal of threaded nails a year after they are driven into test woods.

The threaded shanks, the duplex head, the L-shaped staple—all these variations were designed to fill specific jobs better than the nails before them did. There are a thousand other nails of different style head, point, shank, material, size—or combination of these. Each was made the way it is for a purpose.

When you have a job that calls for nails, it will pay to figure out what kind of fastener would do the job best. You can be sure there is a "best" nail available for the job.

Science Service has prepared a kit containing a variety of nails of new design. A booklet accompanying the nails describes experiments that can be done to demonstrate the astonishing "holdability" of threaded nails. Besides the basic kinds of threaded nail shafts, the kit includes examples of different points, heads, metals and sizes of nails, and experiments to reveal the functions of these different nail characteristics.

These kits are available at 75 cents each from Science Service, 1719 N St., N.W., Washington 6, D.C. Ask for the Nail kit.

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PUBLIC SAFETY

Protect from Drowning

► NEARLY TWO-THIRDS of all drownings occur between May and September, so now is the time to think about preventing these accidents to yourself or family.

Start with the baby. There has been a "shocking" increase in baby drownings during a child's first year of "ambulation," or getting around, Dr. Harry F. Dietrich of the University of California School of Medicine at Los Angeles declares. In a report to G P, published by the American Academy of General Practice, he says it is wrong to teach an infant that he is unsinkable and to be absolutely unafraid of water. Teach the baby respect for water, not fear of it.

In answer to the old question, "When should a child learn to swim?", the doctor points out that he should learn sometime before the likelihood of unexpectedly finding himself in water over his depth.

In the education of older groups, he lists several lessons which must be taught and learned in the interest of safety.

(1) Learn to stay afloat in water.

(2) Learn to shed clothes while in the water to regain maximal swimming ability.

(3) Be impressed with the fact that many things can rob a person of his ability to swim (blow on the head, successive inhalations of water, cramp in the stomach or legs, severe allergic reaction, or extremely cold water and fear.)

There are special lessons to learn too. In various environmental situations a person must learn about currents, tides, undertow, rocks and coral. Dr. Dietrich also warns that a person must be impressed with the danger of being around or in water with a nonswimmer or a swimmer of lesser ability.

That would forestall the tragedy of the capable swimmer being drowned by or with the poor swimmer.

Elderly people need protection too. They should be encouraged to wear life jackets or have them immediately at hand.

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PHYSICS

Atomic Heart Found 15% Smaller Than Thought

► THE HEART of the atom, called the nucleus, which is basic to all matter, is smaller than previously thought to be by 15%.

Beams of mesons, recently discovered subatomic particles, were created in Columbia University's 385,000,000-electron-volt synchrocyclotron "atom smasher." These were used to measure indirectly, through X-ray emission and computations, the size of the atomic heart.

The nuclear radius is a few tenths of a trillionth of an inch. It is smaller for lighter elements and larger for heavier ones, with the size varying with the total number of protons and neutrons in the nucleus. Only about 1/10,000th the linear dimensions of the atom as a whole is occupied by the nucleus.

The experiments with the Nevis cyclotron have been in progress for two years by Val Fitch, graduate student, under the direction of Prof. James Rainwater.

High-energy X-rays were proved to be given off when the mu mesons enter the orbits of an atom and travel to its nucleus. A different and characteristic energy is associated with each element.

Another kind of particle, called the pi meson, is believed responsible for binding the nucleus together and for the energy released in nuclear fission as in the atom bomb. The pi meson in its decay produces the mu meson, used in the experiments. The mass, spin and magnetic moment of the mu meson were measured independently by the two Columbia physicists.

Both old and new size determinations of the atomic nucleus can be reconciled by altering the accepted mental picture of what is inside the atom. Instead of a solid nucleus of uniform density and sharply-defined edges, the nucleus may have a dense center and gradually become fuzzy at the edges.

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Books of the Week

For the editorial information of our readers, books received for review since last week's issue are listed. For convenient purchase of any U. S. book in print, send a remittance to cover retail price (postage will be paid) to Book Department, Science Service, 1719 N Street, N. W., Washington 6, D. C. Request free publications direct from publisher, not from Science Service.

THE AIRCRAFT YEARBOOK, 1952—Fred Hamilton, Arthur Clawson, Eleanor Thayer, and Robert McLaren, Eds.—*Lincoln Press*, 464 p., illus., \$6.00. The aviation industry's own record of its activities and accomplishments during 1952.

AMERICAN FIREARMS MAKERS: When, Where, and What They Made From The Colonial Period To The End of the Nineteenth Century—A. Merwyn Carey—*Crowell*, 153 p., illus., \$5.00. A cyclopedia of firearms makers of both long and short arms, as well as custom made and arms made under federal and state government contracts.

AUSTRALIAN JOURNAL OF ZOOLOGY: Vol. I No. I—N. S. Noble, Ed.—*Commonwealth Scientific and Industrial Research Organization*, 165 p., illus., paper, \$1.15. A medium for the publication of results of original scientific research in zoology with special emphasis on descriptive aspects. Not issued at set periods.

BIBLIOGRAPHY OF FOSSIL VERTEBRATES, 1944-1948—C. L. Camp, S. P. Welles, and Morton Green—*Geological Society of America, Memoir 57*, 465 p., \$5.50. Includes entries on vertebrate paleontology and in other fields where vertebrate fossils are significantly mentioned.

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THE CALIFORNIA CONDOR—Carl B. Koford—*National Audubon Society, Research Rep. No. 4*, 154 p., illus., paper, \$3.00. Results of a 3 year study of the California condor made in order to save the bird from extinction.

CARBON MONOXIDE: Your Car and You—Andrew J. White—*Motor Vehicle Research*, 35 p., illus., paper, \$1.00. Points out the dangers of carbon monoxide, and how to avoid its effects.

CHILDREN LIVING IN THEIR OWN HOMES: Social Services Provided Through Child Welfare Programs—Annie Lee Davis—*Government Printing Office, Children's Bureau Pub. No. 339-1953*, 52 p., illus., paper, 20 cents. Sets forth the range of social services that should be available in each community to help parents in their task of child rearing.

COLLEGE CHEMISTRY: A Systematic Approach—Harry H. Sisler, Calvin A. VanderWerf and Arthur W. Davidson—*Macmillan*, 623 p., illus., \$5.25. Emphasis is placed on the structural basis of the properties of matter.

DOCUMENTS ON GERMAN FOREIGN POLICY, 1918-1945: Poland; The Balkans; Latin America; The Smaller Powers, June 1937—March 1939—Department of State—*Government Printing Office, Pub. 4964*, 977 p., \$3.25. Documents covering German relations with Poland, particularly over Danzig, the German minorities in the smaller powers, etc.

THE GENUS EUGLENA—Mary Gojdics—*Univ. of Wisconsin Press*, 268 p., illus., \$6.50. Incorporates all available taxonomic and morphologic data on the *euglenae*.

THE GROS VENTRES OF MONTANA: Part I, Social Life—Regina Flannery—*Catholic Univ. of America Press*, 221 p., illus., \$2.75. A reconstruction of Gros Ventre life as it was lived before the disappearance of the buffalo around 1884.

A GUIDE TO THE MOON—Patrick Moore—*Norton*, 255 p., illus., \$3.95. Gives essential facts about the moon for those who would travel there by space ship, telescope or imagination.

THE HORSE Book—John Rendel—*Sterling*, 144 p., illus., \$2.95. A pictorial guidebook for horse lovers covering competition, exhibition and breeds.

HOUSING FOR WOOD DUCKS—Frank C. Bellrose—*Illinois Natural History Survey, Cir. 45*, 47 p., illus., paper, free upon request direct to publisher, Natural Resources Bldg., Urbana, Ill. This tells of various types of housing that can be constructed to provide maximum protection for the wood duck from its natural enemies.

HOW TO CARRY ON A CONVERSATION—Grace S. Nutley—*Sterling*, 210 p., illus., \$2.95. A blueprint for better speaking and listening ability.

LIBRARY ORGANIZATION AND MANAGEMENT OF TECHNICAL REPORTS LITERATURE—Bernard M. Fry—*Catholic Univ. of America Press*, 140 p., illus., paper, \$2.25. A brief introduction to the bibliographical control of reports.

MR. TOMPKINS LEARNS THE FACTS OF LIFE—George Gamow—*Cambridge Univ. Press*, 88 p., illus., \$2.75. Mr. Tompkins, leaving the field of physics, investigates biology. He covers the functions of the cells and the bloodstream, compares the new electronic brains with the human brain and deals with genetics.

PATIENTS ARE PEOPLE: A Medical-Social Approach to Prolonged Illness—Minna Field—*Columbia Univ. Press*, 244 p., \$3.75. Discusses the extent and ravages of prolonged illness, the impact on the family, the meaning of hospitalization, and "learning to live with illness."

PESTICIDE HANDBOOK, 1953—Donald E. H. Frear, Ed.—*College Science*, 204 p., paper \$1.25, cloth \$3.00. Contains over 5,000 trade named pesticides, with information on their active ingredients, manufacturers and uses.

PROJECTIVE GEOMETRY AND PROJECTIVE METRICS—Herbert Busemann and Paul J. Kelly—*Academic Press*, 332 p., illus., \$6.00. Emphasizes the discussion of the basic concepts of distance, motion, area and perpendicularity.

REFRACTORY HARD METALS: Borides, Carbides, Nitrides, and Silicides—Paul Schwarzkopf and Richard Kieffer—*Macmillan*, 447 p., illus., \$10.00. The basic constituents of cemented hard metals and their use as high temperature materials.

RIVER ON THE RAMPAGE—Kenneth S. Davis—*Doubleday*, 217 p., \$3.00. The Story of the Kaw River flood of 1950, used as the prototype of all floods and the problems arising therefrom. Offers a program of flood control.

SO NOBLE A CAPTAIN: The Life and Times of Ferdinand Magellan—Charles McKew Parr—*Crowell*, 423 p., illus., \$6.00. Designed to vindicate Magellan's actions, this is the biography of the great Spanish explorer.

STUDIES OF PACIFIC ISLAND PLANTS, XV: The Genus Elaeocarpus in the New Hebrides, Fiji, Samoa and Tonga—A. C. Smith—*Government Printing Office, Vol. 30, P. 5, 50 p., paper, 25 cents*. Describes 25 species found in this area, of which 6 are new types.

YOUR ARTHRITIS: What You Can Do About It—Alfred E. Phelps—*William Morrow, rev. ed.*, 192 p., illus., \$3.00. In this revised edition, the role of the new drugs—cortisone, hydrocortisone and ACTH—in the treatment of arthritis is evaluated.

What General Electric people are saying . . .

RALPH J. CORDINER

*President of the
General Electric Company*

" . . . America is a land of many things, and high on the list are the pioneers. These men who crossed rivers, wrote the first chapter for the occasion that is this Centennial. The responsibility of the scientist, the legislator, the educator, the labor leader, the industrialist, the farmer, and the businessman is to look toward the future. Some people are frightened by it, some are elated, but I believe that a sense-of-the-future can be used to sharpen our senses as to what we are doing and where we are going.

For nearly eight years we have been living in the Atomic Age, whether we like it or not—and there are some who do not like it. But the fact of the matter is, we cannot return to any other Age. Through science, we have drastically changed our environment. Therefore, we must change the manner in which we live to accord with these new conditions. Atomic power promises abundance as readily as desolation—but only on the condition that we welcome and prepare for abundance.

*At Washington Territorial Centennial
Olympia, Washington*

P. A. ABETTI

*Dr. Abetti, a development
engineer with G.E., is a
native of Italy.*

" . . . For years I have been searching through foreign technical literature, as practically all development engineers do to some extent. But the technical journals of Nazi Germany, Fascist Italy, and prewar Japan, wretched as they were, were still a cut above the present magazines of the Communist or Communist-dominated countries.

This shows clearly that the division of the world into two opposing ideological camps has never been as marked as at the present time; it also shows that engineering, often reputed to be entirely separated from politics, is being drawn more and more into the struggle by the rulers of the Red countries.

G.E. Review

H. A. WINNE

*Mr. Winne is Vice President
in charge of Engineering*

" . . . As the average citizen counts his scientific blessings, he carries around in the back of his head a mushroom cloud put there by the memory of Hiroshima, also the gift of science. This is no reason to abandon scientific effort. But it is a reason for us to *clarify* our moral objectives, *face up* to the responsibilities that travel in the wake of technical progress and *win* public understanding.

In this world of uncertainty and fear, the public wants to blame someone, and it is looking squarely at the scientist and the engineer. People are afraid of the hydrogen and the atomic bomb and the possibilities of biological warfare. They tend to move to the faulty conclusion that the men who make such weapons are possibly the villains. They think that perhaps we engineers have at last outsmarted ourselves by planting the seeds of universal destruction.

As I see it, we must correct the false notions the public may have about men of science and engineering and come up with the true significance of scientific progress as it really bears on our destiny as free men. It is important for engineers and scientists to do more than just stand by to be explained and defended.

As engineers and scientists I suggest that we must *improve our human relations* and take note of what the public is saying about us. We must explain the true significance of our work and gain better public understanding.

That will lead to an informed public. And an informed public is necessary to our continued vitality and freedom as engineers and businessmen.

Our future will in a large measure be determined on how well we de-

velop this public understanding to keep pace with our scientific achievements.

*Texas Society of Professional Engineers
Dallas, Texas*

M. M. BORING

*Mr. Boring is Manager,
Technical Personnel
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The Company programs are based on material directed toward better fitting the engineer for a career with the Company. He will gain first-hand knowledge of industry, come in contact with many different products and types of work, and associate with top-flight engineers.

General Electric actively encourages college graduate study, and when this study applies to the individual's work, on approval by his departmental manager, provisions are made for refunds of one-half tuition costs upon satisfactory completion of his courses.

The technical education programs in G.E. may be divided into two main categories: the advanced technical programs, where carefully selected students (any engineer may apply) are given intensive training; and the general and specialized training courses, available to all Company engineers.

Besides having the opportunity for educational development, the engineer in General Electric is given a good job with plenty of responsibility, sound training for a lifetime career, opportunities for careers in widely varied phases of science and engineering, and a good place in which to work, and a place in which to lead a well-rounded life.

At G-E Student Information Meeting

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GENERAL ELECTRIC

TECHNOLOGY

"Toy" Power System Solves Problems of Big Utilities

► A "TOY" power system that sprawls through a room 25 feet square at the University of Illinois is solving real-life problems for electric utilities.

Called a power network analyzer, the machine consists of 500 vacuum tubes, 2,000 telephone jacks, 2,000 coils, 7,000 resistors, 6,000 condensers, 130 meters and 5,000 indicating lights. It can be set up to simulate complex power circuits of interconnected power companies.

It shows what happens when some change is made on the system. The change could be the addition of a new power plant, more transmission lines or more big industrial loads. It even can show how bad storms affect the power system.

Part of the machine's advantage lies in its flexibility. Ideas, perhaps impossible to study by any other method, can be tried out on the machine and studied. Five men working with the machine can figure out more in 11 weeks than 50 men could figure out in two years using ordinary office calculating machines.

The Pennsylvania-New Jersey-New York power network now is being analyzed. When the machine is not being used by utility researchers, it is used by the university in its own teaching and research projects.

Three Midwestern electric utilities financed the network analyzer. The machine was designed and built by the University staff.

Science News Letter, June 6, 1953



Researcher Forbes had bleary orbs,
Cramped digits, inflamed pleura;
Until a friend, who feared the end,
Tipped him off to CONTOURA.*

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ECOLOGY

NATURE RAMBLINGS



Defiers of the Dunes

► **SOME TREES** refuse to die even when they are buried!

Many thousands of people, for many years, have seen and wondered at the half-buried trees in the sand dunes around the southern and southeastern shores of Lake Michigan—the highest dunes in the world.

Some species, like oaks, give up very soon when the steady winds drift the sand deep around their trunks. Others, however, like cottonwoods and lindens, are not to be discouraged. Their branches keep on living, and throw out new roots near the new ground level established by the rising dunes.

A study on dunes in the South, on the Florida west coast, where the trees buried are magnolias, palmettos and other typically Southern species has shown that grain by grain the sand piles up. First the single trunk is buried, then the primary limbs; finally the smaller branches. With only the top above the sand and the base buried below, what was once a tree becomes a wide expansive shrub.

In some cases the original roots appear to be still functioning. In many other instances, however, enormously long adventitious roots are put forth from the stems higher up, to replace the dead ones lost in the depths of the sand. In this way new shoot and root systems are literally stacked one upon the other.

Magnolia, scrub live-oak and saw-palmetto keep their tops above invading sand by stem elongation and production of roots therefrom. Stems laid bare by winds reveal that magnolia stacks new plants upon its old frame; that both magnolia and live-oak may multiply into new individuals by the separation of formerly connected stems in the sand below.

On old stable dunes where the soil is rich and moist and the atmospheric conditions mild, magnolias may develop from seed and, barring catastrophe by man or fire, develop into normal trees and magnolia forests.

When dunes sweep into a growth of slash pine, the end result looks the same. Pine "bushes" projecting from the sand are really the uncovered tops of trees buried below. However, in this case no new roots are formed higher up on the trunks; the old roots, though buried deep, are not discouraged and keep on functioning.

Science News Letter, June 6, 1953

NUTRITION

**Agriculture Research
In Gastronomic Review**

► THE GASTRONOMIC review of the researches conducted by the U. S. Department of Agriculture, served to President Eisenhower at the Department's Agricultural Research Center at nearby Beltsville, Md., included 23 items.

The menu started with orange juice from an orange juice powder that may be stored without refrigeration and ended with salted pecans from the new Barton variety that are high-yielding, thin-shelled, with superior keeping qualities.

Along with such solid food as prime ribs of beef, cold sliced baked ham, glazed sweet potatoes, peas, mushrooms, asparagus, potato salad and strawberry pie (all from research-developed varieties) the menu offered the following unusual tidbits:

Whole-wheat rolls made more nourishing by adding protein and iron in the form of non-fat milk and molasses.

Whey cheese spread from proteins recovered from whey after cheese manufacture, developed to give a new use for milk proteins now largely wasted or fed to animals.

Swiss cheese from pasteurized milk which yields a safer product.

Honey-fruit spread, now being made commercially by a process developed by Department researchers, which combines fruit juice and honey; special comb honey from improved honeybees; and crystallized honey, the result of controlled granulation which gives fine, smooth crystals.

The hot-weather candy on the menu did not melt on the warm day because it contains a high-melting fat which Department researchers found would make candies that withstand high tropical temperatures without softening.

Science News Letter, June 6, 1953

MAGIC

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37 conjuring tricks and patter for sophisticated audiences in Wilfred Jonson's 128-page beginner's book, "MAGIC TRICKS." 57 ill., incl. portrait gallery of 25 leading magicians. Also available: Jonson's "CARD TRICKS", containing 52 effects—false shuffle force, palming, etc.—clearly explained for beginners, 128 pp. 49 ill. Each paper-bound book 60c pstd. from Dover Pub. Dept. 168, 1780 B'way, N. Y. 19. Cash-back guarantee.

ANTHROPOLOGY

Brazil's Tribes Dying Out

Native tribes in wild and isolated forest regions of Brazil are found to be disappearing by scientists from Smithsonian Institution.

► IT IS MORE than 25 years since the British engineer, Col. Faucett, entered the forest swamps of Brazil's Mato Grosso in search of a city of gold only to disappear without a trace. Now the Indian tribes he found there are on the way to disappearance, too.

This wild and isolated region, extending over hundreds of square miles in the basin of the Xingu River, is now inhabited by fewer than a thousand Indians. They belong to at least 13 distinct tribes and speak languages in four almost completely unrelated linguistic families. These tribes are remnants of groups once much larger and more powerful.

One dwindling group now consists of only one woman and her son. Several others have been reduced to only four or five.

The practically unknown people of the upper Xingu River have just been visited and studied by a party from the Smithsonian Institution, Washington, and the Escola de Sociologia e Política of São Paulo, Brazil. A description of their interesting lives and customs is contained in a Smithsonian report, "Indian Tribes of Northern Mato Grosso, Brazil," by Dr. Kalervo Oberg, anthropologist.

Although they live in constant fear of surrounding Indian tribes who are openly hostile, the people of the Xingu Basin have been called by missionaries the League of Nations because they have such peaceful and affectionate ways with each other and with the visiting scientists.

Dr. Oberg described the intimate conditions under which the head of the camp had to prepare his reports:

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"Seated on a wooden bench, he was bent over a makeshift table and was calmly smoking a pipe and writing while two boys with their arms around him were seated on either side. In his lap he held a year-old child, with the mother bending over his shoulder and a few more children milling around his feet. To top it all, his favorite parrot sat on his shoulder and a bemtevi (a yellow-breasted bird about the size of a robin) kept hopping on and off his head."

"At first it was a little embarrassing," Dr. Oberg admitted, "to be completely surrounded by about 30 naked men, women and children, each of whom insisted upon opening our shirt fronts, putting their hands in our pockets, pulling out and examining each item, pulling up our trousers to feel the hair on our legs, or repeatedly untying and tying our shoelaces. After trying on my glasses and sun helmet, one Indian put his fingers to my mouth, wanting to know whether I could pull my teeth out."

The many different peoples of this region have some customs in common which set them off from other Indians. One such is the "uluri," a small triangular piece of cloth made from wood fibers.

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NUTRITION

Recipe for Potato Salad Served Ike

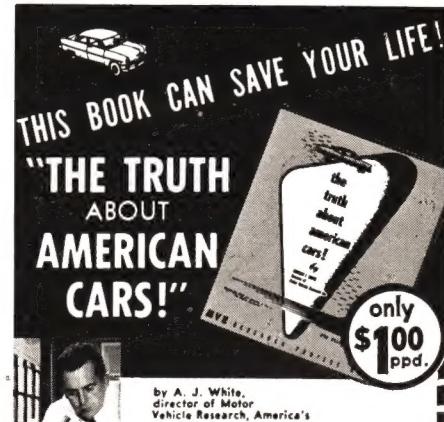
► YOU CAN serve your family potato salad from a recipe by the same experts who prepared the recipe for the salad served President Eisenhower at a Department of Agriculture research luncheon recently.

For the President and his party the potato salad was made from a recipe developed by the Bureau of Human Nutrition and Home Economics for school lunches and other large quantity cookery. Here is the same bureau's recipe for salad for four:

Ingredients: three cups cubed cooked potatoes chilled; one tablespoon minced onion; one cup thick salad dressing; one teaspoon salt; one-fourth cup chopped green pepper; one-half cup finely cut celery; one-fourth cup chopped pickles or cucumber.

Gently mix potatoes, onion, dressing and salt, taking care to blend well yet not break up the potatoes. Chill the mixture until serving time. Then add the rest of the ingredients, mixing lightly and adding more dressing if needed. Serve on lettuce garnished with tomatoes cut in wedges.

Science News Letter, June 6, 1953



This is the book that tells the truth about today's automobiles! Motor Vehicle Research's dynamic director, A. J. White, has ripped away the veil of public indifference that threatens to sabotage automotive design. Here are all the facts, in 73 sensational chapters, about the cars that come off Detroit's drawing boards and assembly lines . . . written by the man who has tested these cars to bring out every feature, every fault. Don't gamble your life away . . . send for your copy of "The Truth About American Cars" today! Only \$1 ppd.

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* **FLY TRAP** is a metal device that screws on the top of any quart-sized mayonnaise, or mason throwaway jar. Baited with a special fly toxin and food, flies can enter the trap but cannot leave. Good for use in houses, stores, and barns.

Science News Letter, June 6, 1953

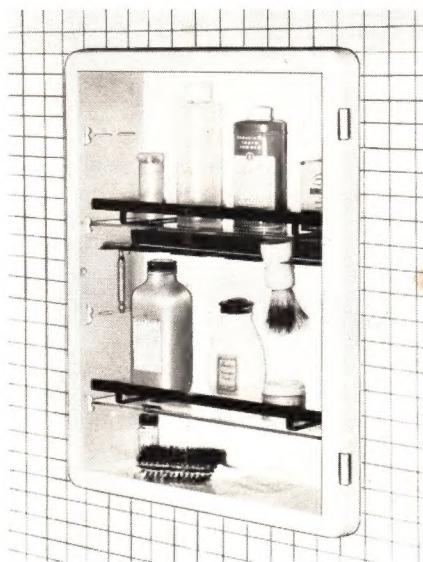
* **WATER DEMINERALIZER** for steam irons is a plastic squeeze-bottle which is filled with ordinary faucet water and shaken briefly. This "brings the demineralizer's high capacity mineral-removing resins in contact with all the water," the manufacturer reports, conditioning it for use in irons.

Science News Letter, June 6, 1953

* **TREE PROPAGATION** packet consists of sphagnum moss and vinyl plastic wrappings impregnated with hormones, nutrients, trace elements, insecticides and fungicides. Bark is trimmed away from the branch to be rooted and the material is wrapped around the exposed part. In three to eight weeks the branch should sprout roots. Then it can be cut off the tree and planted.

Science News Letter, June 6, 1953

* **SHELF GUARDS** for medicine chests keep bottles, boxes and razors from clattering to the wash basin whenever medicine on the back of the shelf is lifted out. The



device itself, as shown in the photograph, provides a secure niche just for razors and shaving brushes, thus increasing shelf space.

Science News Letter, June 6, 1953

* **PHOTOGRAPHIC PLATES** having a particularly fine grain and a high resolving power are designed for the production of extremely fine line images. The plates come in sizes of 1" x 3" to 8" x 10", and are handled in the same manner as ordinary

photographic plates. They have been used to record as many as 70,000 well-formed characters in a five-square-inch area.

Science News Letter, June 6, 1953

* **WATERPROOF GLUE** for wood consists of liquid resorcin resin and a powdered catalyst. It is available in quarter-pint, pint, quart, gallon and five-gallon sizes, and is said to be the only completely waterproof glue nationally available to consumers in these small sizes.

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* **FILING MACHINE** resembles a Ferris wheel in that removable card trays ride on a wheel-like structure, and are always upright. Cards are not attached to the trays, thus can be "pulled" easily. The big wheel is either turned by hand or is driven by a motor. It has a storage capacity "from 100 to several thousand" linear filing inches.

Science News Letter, June 6, 1953

* **DRY BAIT** holder is made of inexpensive cardboard and keeps poisoned rat bait off plant floors in a rigid, untippable dish. The holder collapses into a trim square four inches on a side for storage. It can be discarded after use.

Science News Letter, June 6, 1953

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Do You Know?

Cochineal is the parasite of a fig tree which the Mexican Indians used in making a vivid red dye.

When train whistles were prohibited from blowing in Corpus Christi, Texas, train-car collisions increased 50%.

The life of cold cathode lamps remains the same regardless of the number of lamp starts per hour; but the life of rapid-start fluorescent lamps diminishes the more they are cut off and on.

Polluted water can look safe, smell safe and taste delicious, yet be as dangerous as poison.

The action by which TV picture tube phosphor particles are bound to the glass is not fully understood.

"Moose" is an American Indian word from one of the Algonquian dialects.